

Name

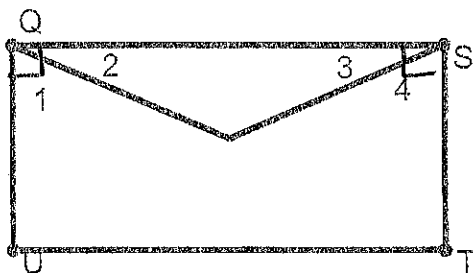
Key

Date

Chapter 2: Proofs
(2.6-2.8 worksheet #2)

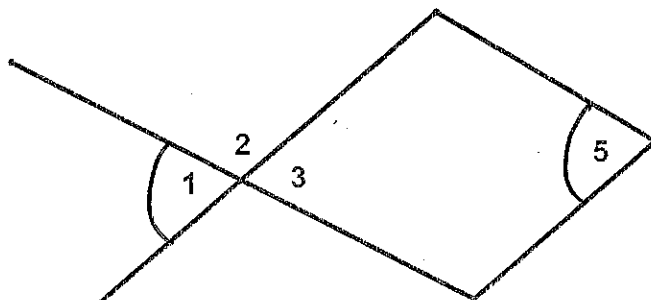
1. Given: $\overline{UQ} \perp \overline{QS}$; $\overline{TS} \perp \overline{QS}$
 $\angle 1 \cong \angle 4$

Prove: $\angle 2 \cong \angle 3$



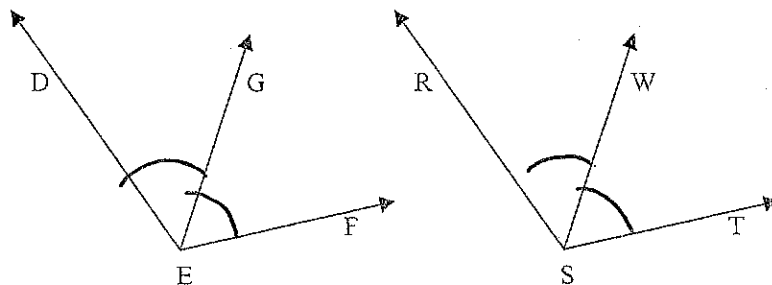
Statements	Reasons
1. $\overline{UQ} \perp \overline{QS}$ $\overline{TS} \perp \overline{QS}$	1. Given
2. $\angle UQS$ is a right angle; $\angle QST$ is a right angle	2. def of \perp
3. $\angle 1 + \angle 2$ are comp. $\angle 3 + \angle 4$ are comp.	3. The Complement Theorem
4. $\angle 2 \cong \angle 3$	4. Compl. of $\cong \angle$ s are \cong

2. Given: $\angle 1 \cong \angle 5$
Prove: $\angle 2$ and $\angle 5$ are supplementary



Statements	Reasons
1) $\angle 1 \cong \angle 5$	1. Given
2) $m\angle 1 = m\angle 5$	2. def of \cong
3) $\angle 1$ and $\angle 2$ are supplementary	3. Supplement thm
4) $m\angle 1 + m\angle 2 = 180$	4. def of suppl
5) $m\angle 5 + m\angle 2 = 180$	5. substitution
6) $\angle 2$ and $\angle 5$ are supplementary	6. def of supplementary

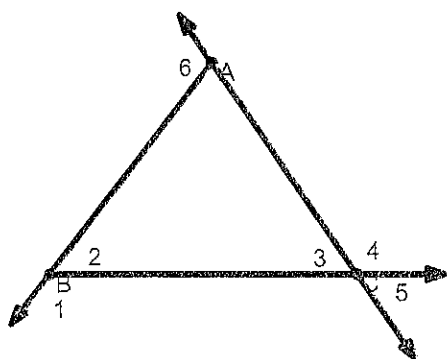
3. Given: \overrightarrow{EG} is the bisector of $\angle DEF$,
 \overrightarrow{SW} is the bisector of $\angle RST$
 $m\angle DEG = m\angle RSW$
 Prove: $m\angle DEF = m\angle RST$



Statements	Reasons
1) \overrightarrow{EG} is the bisector of $\angle DEF$, \overrightarrow{SW} is the bisector of $\angle RST$	1) Given
2) $m\angle DEG = m\angle GEF$ $m\angle WST = m\angle RSW$	② def of bisector
3) $m\angle DEG + m\angle GEF = m\angle DEF$ $m\angle WST + m\angle RSW = m\angle RST$	③ AAP
4) $m\angle DEG + m\angle DEG = m\angle DEF$ $m\angle RSW + m\angle RSW = m\angle RST$	④ substitution
5) $2m\angle DEG = m\angle DEF$ $2m\angle RSW = m\angle RST$	⑤ substitution
6) $m\angle DEG = m\angle RSW$	6) Given
7) $2m\angle DEG = 2m\angle RSW$	⑦ Mult.
8) $m\angle DEF = m\angle RST$	⑧ Substi.

4. Given: $\angle 2 \cong \angle 3$
 Prove: $\angle 1 \cong \angle 4$

Hint: Think Linear Pairs

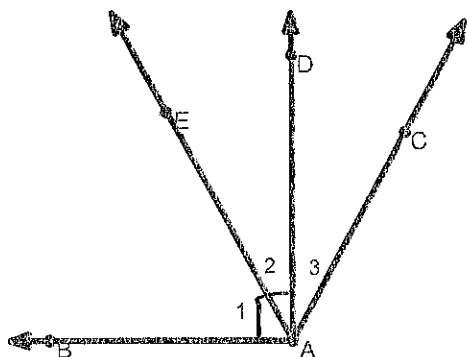


Statements	Reasons
① $\angle 2 \cong \angle 3$	① Given
② $\angle 1 + \angle 2$ are suppl $\angle 3 + \angle 4$ are suppl.	② The Supplement Thm
③ $\angle 1 \cong \angle 4$	③ Suppl. of \cong \angle s are \cong

5. Given: $\overrightarrow{AB} \perp \overrightarrow{AD}$

\overrightarrow{AD} bisects $\angle EAC$

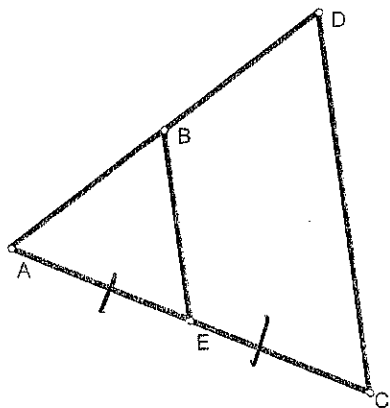
Prove: $m\angle 1 + m\angle 3 = 90$



Statements	Reasons
① $\overrightarrow{AB} \perp \overrightarrow{AD}$ \overrightarrow{AD} bisects	① Given
② $\angle BAD$ is a rt \angle	② def \perp
③ $\angle 1 + \angle 2$ are compl	③ The Complement
④ $m\angle 1 + m\angle 2 = 90$	④ def of compl.
⑤ $m\angle 2 = m\angle 3$	⑤ def of \angle Bis
⑥ $m\angle 1 + m\angle 3 = 90$	⑥ subst.

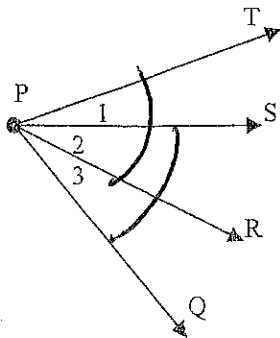
6. Given: midpoint E of \overline{AC} ,
 $AC = AD$

Prove: $2AE = AD$



Statements	Reasons
① E is midpt \overline{AC} $AC = AD$	① Given
② $AE + EC = AC$	② SAP
③ $AE = EC$	③ def of midpt
④ $AE + AE = AC$	④ subst
⑤ $2AE = AC$	⑤ subst
⑥ $2AE = AD$	⑥ subst

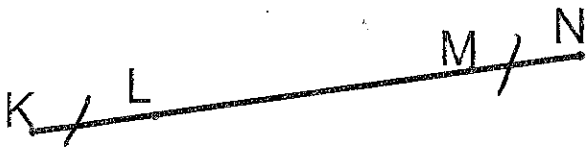
7. Given: $m\angle TPR = m\angle QPS$
 Prove: $m\angle 1 = m\angle 3$



Statements	Reasons
① $m\angle TPR = m\angle QPS$	① Given
② $m\angle TPR = m\angle 1 + m\angle 2$ $m\angle QPS = m\angle 2 + m\angle 3$	② AAP
③ $m\angle 1 + m\angle 2 = m\angle 2 + m\angle 3$	③ Substitution
④ $m\angle 2 = m\angle 2$	④ Reflexive
⑤ $m\angle 1 = m\angle 3$	⑤ Subtraction

8. Given: $KL = MN$

Prove: $\overline{KM} \cong \overline{LN}$



Statements	Reasons
① $KL = MN$	① Given
② $LM = LM$	② Reflexive
③ $KL + LM = LM + MN$	③ Add
④ $KL + LM = KM$ $LM + MN = LN$	④ SAP
⑤ $KM = LN$	⑤ Subst
⑥ $\overline{KM} \cong \overline{LN}$	⑥ def of \cong